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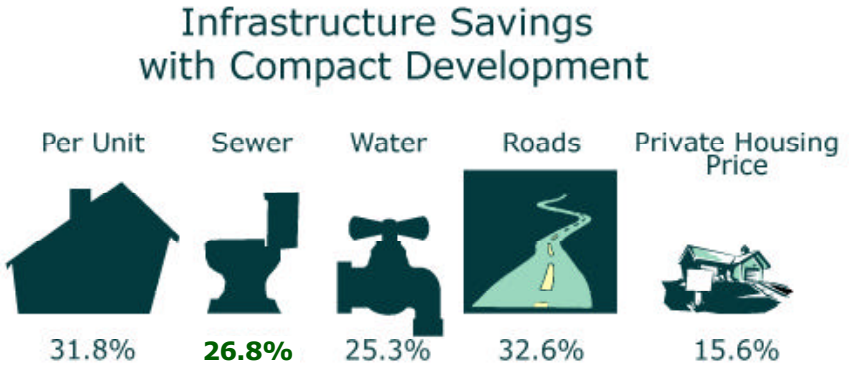
Rather than defining "sprawl" as growth itself, it is more accurately described as a growth pattern called "trend development." This pattern can be understood by examining its location, density, and design. Location refers to where the growth is taking place in reference to existing infrastructure and population centers. Density defines how many housing units are built per acre. Design looks at the amenities included with the development, such as sidewalks, parks, open space and the separation of residential use from other uses.

The trend of "leapfrog development" refers to skipping over previously developed locations to favor areas at a greater distance from existing population and infrastructure centers. This kind of development also tends to be low density; usually no more than four units per acre. Trend development is often characterized by separated land use, with considerable distance between residential, shopping, and employment centers. This requires a car to be used for travel to work and shopping. Trend developments often have wide streets and few, if any, sidewalks. Also, the street pattern offers few entrance and exit choices from the development. Cul-de-sacs tend to restrict traffic flow and limit entrance onto main roads to only a few locations.



The concepts of location, density, and design can also be used to describe compact development. The tendency to locate in approved growth areas contiguous to either a town or previously developed area is seen in compact development. Density levels for compact development tend to be higher than that of trend development; usually 5 to 7 dwelling units per acre, or more. Compact development typically includes an integrated pedestrian and bike network, newer streets interconnected with existing streets, intermingling of residential and

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commercial uses, and the inclusion of parks or open space networks within developments.

The positive impacts of compact development include a more diverse range of transportation options, a more economical extension of public services and utilities, and the location near existing developed areas and higher densities enable natural qualities and agricultural areas to be preserved and protected.

Development patterns have an impact on infrastructure costs, private housing costs, land consumption, public sector costs and revenues, vehicle use, water quality and public safety. Evidence of the magnitude of this relationship has been shown in numerous studies that have quantified the relationships between development patterns and these impacts. There is a significant difference between the impacts created by trend and compact development.

The cost to provide infrastructure (sewer, water, school and roads) is shown to decrease as the density of development increases. Studies show that compact development can save an average of 31.8%.[15] Compact development is located closer to existing infrastructure and takes place at higher densities than trend development does so compact development will require fewer pipes in the ground and therefore cost less than trend development. Studies found an average savings of 26.8% with compact development.[16] For water infrastructure, compact development saved an average of 25.3%.

Developers often pick up a significant portion of the tab for sewer and water capital expenditures. Also, the expense to operate and maintain a sewer or water system has a larger affect on taxpayers than the cost to invest in new infrastructure. As the number of connections per mile increases, the cost of water and sewer service decreases.[17] Higher population and employment density is correlated with lower wastewater conveyance costs.[18] Another study found that as lot size increases and the distance

[15] See reference list on pages 113-114 items: #2, 5, 8, 11, 12, and 15.
[16] See reference list on pages 113-114 items: #2-4, 8, 10-12, 15, 16, and 19.
[17] See reference list on pages 113-114 item: #7
[18] See reference list on pages 113-114 item: #14

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from the water or sewer plant increases, the cost to provide water and sewer increases.[19] Sewer and water operating costs are less for compact development than they are for trend development.

It was discussed that the pattern of development would not change the ultimate number of children living in an area. There was a modest, average school cost savings of 5.9% for compact development.[20] Some studies assume that school costs will go down as growth is directed (compact growth) to areas with excess school capacity. In this situation transportation costs would also decrease because students live closer to schools.

Road costs for maintenance and new construction reported a savings of 32.6% with compact development over that spent on trend development.[21]

Private housing costs were found to be reduced an average of 15.6% when compared with trend development.[22]

Trend development uses more land with its larger lot sizes and more remote locations when compared with compact development. An average total land savings of 29.3% comes with using compact development over trend development.[23] Compact development saves an average of 31.9% agricultural land, and 42.4% for fragile environmental land.[24]

The land savings has benefits such as protection of scenic vistas, preserved character of rural areas, and supporting the economic viability of active farm operations. Compact development protects the viability of agricultural uses and encourages the integration residential, agricultural and commercial uses, which promotes the fiscal health of the jurisdictions.

There are definite public sector cost and revenue benefits associated with compact development. Several examples are less expensive infrastructure provision, less expensive operating costs, and promoting fiscally beneficial

[19] See reference list on pages 113-114, item: #17
[20] See reference list on pages 113-114, items: #2, 4, 8, 10, and 15.
[21] See reference list on pages 113-114, items: #2-5, 8, 10-12, 15, and 16.
[22] See reference list on pages 113-114, items: #2-3, 12, 14, 15, and 16.
[23] See reference list on pages 113-114, items: #1-5, 15, 16, and 19.
[24] See reference list on pages 113-114, items: #2, 3, 16, and 19.

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integration of land uses. Studies report that a 32.5% more positive cost/revenue ratio for jurisdictions using compact growth.[25] Nearly a third less monetary support from taxes and fees is required by compact growth.

The pattern of development can influence how frequently people need to use vehicles for daily tasks. Trend development is often distant from existing employment and business districts making the car the only way to go from place to place. Compact development tends to place residential uses in the vicinity of commercial uses so that a short car ride is plausible. Through the provision of pedestrian and bike networks, compact development tends to make walking or bicycling a more attractive option. Compact development can result in 16.6% less vehicle miles traveled than trend development.[26]

Water quality is also impacted through the imposition of impervious surface cover on previously undeveloped land. Increased impervious surface cover causes most stormwater to runoff quickly into stormwater drains rather than draining naturally and being filtered by the soil on its way to streams and rivers. The effects of this disruption of nature's drainage system are more frequent floods and droughts, erosion of streambanks due to increased runoff, and pollutants introduced by the non-filtered water. Trend development creates significantly more impervious surface cover than compact development does. Trend development tends to have more, wider roads than typically found in compact development. Compact development can result in an average of 42.9% less impervious surface cover.[27]

Anecdotal evidence exists for public safety response times, but not many systematic studies have been done. EMS calls from compact

[25] See reference list on pages 113-114, items: #2, 3, 26, and 19.
[26] See reference list on pages 113-114, items: #1, 2, 5, and 13.
[27] See reference list on pages 113-114, items: #1, 2, 5, and 13.

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development areas were, on average, responded to in approximately 27% less time.[28] Evidence suggests that a compact development pattern allows for more efficient provision of public safety services than trend development does.

The long-term cost of development includes operating and public service costs that must be borne by all of a jurisdiction's residents, not simply new arrivals. Evidence has shown that trend development has fiscal and public service impacts that can lead to a choice between the thinning of services and the raising of taxes. These characteristics tend to worsen the fiscal position of state and local governments and force the choice between the lowering service standards and the raising of taxes to maintain existing standards.

Delaware's physical landscape contains bustling urban environments, small towns, rural and agricultural areas; and pristine wetlands. Residents of Delaware are also fortunate to live in a state that has been fiscally well-managed. This enables taxes in Delaware to be relatively low. In 2003, only New Hampshire and Alaska had lower state and local tax burdens than Delaware has.[29] To preserve Delaware's sound fiscal situation and environmentally diverse landscape, the state needs a development pattern that efficiently uses public infrastructure and minimizes consumption of undeveloped land. The research provides strong evidence that a compact development pattern is well suited to maintaining Delaware's fiscal health and preserving the many characteristics that make Delaware a worthwhile place to live and work.

[28] See reference list on pages 113-114, item: #9.
[29] See reference list on pages 113-114, item: #18.

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Open Space Design Techniques[30]

Rural subdivisions on productive farmland are strongly discouraged. However, some rural lands are only marginally productive and may, inevitably, come under development pressure. Often, some development is permitted by the local jurisdiction. In such cases, there are still ways to protect the rural landscape by carefully planning the new development.

Each time a rural or suburban property is subdivided, an opportunity exists for adding land to a community-wide network of open space. Conservation subdivision design simply rearranges the development on each parcel so that half (or more) of the buildable land is set aside as open space. This allows the same number of houses to be built in a less land consumptive manner, allowing the balance of the property to be protected and added to a network of community green space. The density-neutral approach outlined below is a fair and equitable way to balance conservation and development in rural areas under development pressure.

Open space or cluster developments can be more profitable than conventional developments, because infrastructure costs are reduced and homes appreciate and sell for more. They can also minimize the loss of farmland and forest while increasing property values. These subdivisions provide the same number of dwelling units as conventional development. They are carefully designed, however, to preserve parts of a rural site and cluster the houses on the remainder.

Counties and municipalities in Delaware allow, and sometimes even encourage clustering as an option in their rural areas. Although new housing in the Investment Levels One and Two is the preferred development pattern, open space developments can be a profitable option for small-scale subdivisions on nonproductive rural land in the Investment Levels Three and Four. They can blend houses into the landscape and to some degree can allow for the continuation of working farms or ranches.

[30] Adapted from "Better Models for Development in Delaware," Developed for Delaware by The Conservation Fund, the document is available on the State of Delaware Planning web site at: http://www.state.de.us/planning

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Open Space Design Techniques

What are the Advantages of Open Space Design?

- Developers save money by not having to build as many streets, gutters, drains, or sidewalks.
- Many people prefer open space design because such developments provide access to nature and outdoor recreation, enhance property values, and reduce the time and expense of maintaining extra-large yards.
- The public benefits from open space design because it means less concrete and asphalt, less polluted runoff, more wildlife habitat, and more trees and green space.

The Conservation Design Concept

In his book *Growing Greener: Putting Conservation into Local Codes and Ordinances,* land use expert Randall Arendt explains how open space design works.

Designing subdivisions around the central organizing principle of land conservation is not difficult. However, it is essential that ordinances contain clear standards to guide the conservation design process. The four-step approach described below has proven to be effective in laying out new full-density developments where all the significant natural and cultural features have been preserved.

Step One consists of identifying the land that should be permanently protected. The developer performs a detailed site analysis in order to precisely locate features to be conserved. The developer first identifies all the constrained areas, such as wetlands, floodplains, and steep slopes, called *Primary Conservation Area*. The developer then identifies *Secondary Conservation Areas,* which comprise noteworthy features of the property that are typically unprotected under current codes: mature woodlands, greenways and trails, river and stream corridors, prime farmland, hedgerows and individual free-standing trees or tree groups, wildlife habitat and travel corridors, historic sites and structures, scenic viewsheds, etc. After "greenlining" these conservation elements, the remaining part of the property becomes the Potential Development Area.

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Step Two involves locating sites of individual houses within the Potential Development Area so that their views of the open space are maximized. The number of houses is a function of the density permitted within the zoning district.

Step Three simply involves "connecting the dots" with streets and informal trails, **while Step Four** consists of drawing in the lot lines.

This approach reverses the sequence of steps in laying out conventional subdivisions, where the street system is the first thing to be identified, followed by lot lines fanning out to encompass every square foot of ground into house lots. When municipalities require nothing more than "house lots and streets," that is all they receive. But by setting community standards higher and requiring significant open space as a precondition for achieving full density, officials can effectively encourage conservation subdivision design. The protected land in each new subdivision would then become building blocks that add new acreage to community-wide networks of interconnected open space each time a property is developed.

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Community Design Subcommittee

Livable Delaware Community Design Subcommittee

The Community Design Sub-committee of the Livable Delaware Advisory Committee has produced a Community Design Publication which offers guidelines and inspiration for more innovative development in Delaware. Also, another product of the early meetings of the committee is the following **core values** list for better community design.

Core Values

Foundation of Community Design: The Impact on People

Good community design creates a strong quality of place which helps people cultivate a secure relationship with their neighbors, community and environment.

Community Design Core Values

A land development project starts with initial thoughts for how to use and develop the property. An early focus on good community design provides the owner or developer with an alternative way of conceiving the project. The "core values" recognize specific contributing elements of good design and provide a base of guidelines.

The following recommendations present a hierarchical approach to planning a project. The assessment begins with understanding the site and thoughtful consideration of how community design impacts the lives of the residents. Considerations such as location character, surrounding patterns and scale of uses should be taken into account as the project evolves. Good design promotes a quality of place, enhances the self-image of the residents and allows identification with enjoyable surroundings.

Value 1: Land Features before Land Design

As a first step, identify and map the property's assets to:

- incorporate or work around wetlands, steep slopes, established forests, waterways, historic or pre-historic sites;
- maximize habitat protection and minimize habitat fragmentation;

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- give protections of the natural resources priority before examining the layout of the project;
- put development on the least valuable areas rather than on the most valuable site elements; and
- incorporate the site's resources when designating areas for preservation and recreation.

Value 2: Land Design before Yield

Instead of focusing on the potential project yield in number of units per acre, let the design flow from the:

- land features;
- desired appearance of finished project;
- functionality of the built environment;
- project's character; and
- appropriateness of the project's location in regard to neighbors, environment and surroundings.

Value 3: Cluster before Sprawl

Look at opportunities to cluster the project's components with:

- priority for smaller lots by reducing larger lots and dispersed uses;
- mixed uses;
- more compact and efficient land design;
- walk-ability;
- connectivity; and
- seamless transitions between uses rather than abrupt borders.

Value 4: Scale before Statement

Determine the design and appropriateness of structures based on the general context of the area to:

- promote construction that is sensitive to the scale and context of the surroundings,
- rather than building the biggest, most impressive buildings possible;
- build structures designed to fit a human scale and perspective; and
- examine the manageability of home sites and proximity of buildings to each other.

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Value 5: Neighborhood before Individual Ownership

Pursue designs that accommodate social interaction and incorporate shared access to community resources by:

- examining the connection to adjacent uses – such as shopping, schools and recreation – rather than building individual homes and businesses on isolated sites;
- allowing the natural qualities of the site – such as water bodies or vistas – to be accessible to the entire community rather than limited to a few areas; and
- offering opportunities for interaction with others as well as individual areas for fostering pride of ownership and identity.

Value 6: Community Inclusion before Site Exclusion

Design projects that are place sensitive and foster identity by:

- avoiding real or perceived (designed-in) isolation, separation or exclusion such as that found in gated communities or those that focus layout inward and separate from neighborhood or community; and
- encouraging communication among neighbors through greenways, paths, open space corridors and compactness.

Value 7: Pedestrian before Vehicle

In the design, take the opportunity to put pedestrians first by:

- promoting walking and biking;
- making the automobile secondary in the design process, while recognizing its continuing necessity;
- recognizing that roadways can be more that just a means to convey vehicles;
- promoting the use of roads as open space and routes for other modes of travel; and
- minimizing excess vehicle travel by making roads friendly to walkers and bikers. This benefit added value of increasing community identity and integrity.

Value 8: Sensibility before Fad

Seek designs appropriate to the local market which reflect the lifestyles of area residents:

- resisting the architectural fad of the moment when those designs clearly do not fit the community;

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- designing a mix of types, styles and sizes of residential units; and
- building active, human-scaled commercial streets rather than huge shopping complexes with expansive parking areas.

Value 9: Context before Application

Focus on identifying, preserving and creating community character by:

- attention to scale and context-sensitive architecture;
- examining local vernacular styles rather than blind acceptance of corporate, regional or national designs; and
- providing for seamless transitions of uses and activities rather than rigid zoning districts and use requirements.

Value 10: Land Planning and Architectural Design before Engineering

Stress design flexibility and creativity by:

- avoiding reliance on rigid, engineering-based development parameters (such as those typically found in subdivision ordinances); and
- adopting more flexible standards for lot sizes/shapes, setback, floor area ratios, turning radiuses and street widths.

Value 11: Community Character before Ordinance

Tailor land development controls to the community and regional setting by:

- using design to create quality places rather than relying on ordinances and standards to create community;
- minimizing rigidity in the regulatory process;
- avoiding merely mirroring "common usage" controls and approaches used elsewhere; and • avoiding approaches that were developed to fit unique circumstances of another jurisdiction – one size doesn't fit all.
- As population has increased and the housing stock has increased at a greater rate, Delaware has lost agricultural land and forests and gained developed uses. Increasingly the trend has been toward growth outside of towns in the unincorporated areas. [17]
- Due to increasing sprawl, the decline of the cities and towns, and the loss of agricultural land, land use is a major public policy issue in Delaware.

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Promoting Development in Growth Areas

- In Investment Levels 1 and 2, the state will promote a mixture of housing types and prices, and protection and enhancement of existing housing and choice. Investment in housing in combination with community revitalization and public services will be used to restore and improve existing neighborhoods, promote viable downtowns and reuse of older residential, industrial and commercial zones. In Investment Levels 2 and 3, state investments in housing in combination with community redevelopment, and other services will enhance smaller communities, and support moderate levels of primarily residential growth supplemented with essential neighborhood services. In Investment Levels 2 and 3, a broader mix of housing types and rehabilitation efforts to ensure safe and habitable housing will be encouraged. In Investment Level 4 areas, the state will manage its resources to limit continued development in support of agriculture, agribusiness, and similar economic activities that are land- or water- dependent, to protect water supplies, to preserve critical habitat to support a diversity of species, and to preserve the existing housing stock.

Quality of Life Issues:

- Quality of life issues are central to continued growth and development in Delaware. Crime rates in Delaware steadily dropped from 1995 to 2000. Throughout the state there are a variety of cultural, historical and recreational amenities that will continue to make the state a desirable place to live. A comparison of the cost of living in Delaware against other East Coast areas shows that Delaware is less expensive to live in than either Philadelphia or Washington, D.C. Additionally, cost of living data has remained fairly steady since 1995.
- The combination of the lower cost of living and the variety of cultural and recreational amenities in the state support continued growth in Delaware. The lower cost of living in Delaware in relation to adjoining East Coast metropolitan areas encourages the location of business that will create jobs in the state.

Improving Housing Choice

Delaware State Housing Authority

The Delaware State Housing Authority (DSHA) offers numerous homeownership programs to low- and moderate- income Delawareans. The DSHA also offers programs to assist in home rehabilitation. In addition to sponsoring programs that directly provide affordable housing to Delawareans, DSHA works with housing providers to assist them in meeting Delaware's housing needs. Investors, developers, local governments and non-profit organizations can obtain financial assistance from, or partner with, DSHA in order to provide more affordable housing opportunities to Delawareans.

1. Community Development Block Grants - (CDBG)

Each year, Kent and Sussex County and local municipalities within these counties apply to DSHA for a portion of this federal grant money. DSHA administers the funds to these governmental entities, which in turn use the money to help repair substandard housing and make infrastructure improvements in needy areas of each county. Municipalities can request sewer and water system improvements, street repairs, street lights and other infrastructure improvements that support low- and moderate-income housing development.

2. Delaware Housing Partnership - (DHP)

This initiative combines 6% interest rate downpayment and closing cost loans of up to $10,000 with pre-approved, newly-constructed affordable homes.

3. Emergency Shelter Grants Program - (ESGP)

The federal assistance provided under this program benefits emergency shelters by allowing them to expand services and renovate their shelters. It is offered by DSHA in Kent and Sussex Counties.

4. Housing Capacity Building Program - (HCBP)

This initiative helps providers of affordable housing increase their capacity to build and maintain affordable housing. A joint initiative of DSHA, the University of Delaware, the Delaware Community Investment Corporation and the Delaware Community Foundation, the program provides a range of

Delaware State Housing Authority

assistance including capacity building grants, training and technical assistance.

5. Housing Development Fund - (HDF)

The HDF is Delaware's primary financial resource to help housing providers across the state access financing to create or rehabilitate affordable housing, or offer unique housing programs for low- and moderate-income persons.

6. Housing Rehabilitation Loan Program - (HRLP)

This program offers loans of up to $35,000 at 3% interest rates to low- and moderate-income home owners and landlords who rent to low-income tenants in order to make necessary State Housing Code repairs or handicapped-accessibility modifications.

7. Live Near Your Work - (LNYW)

The LNYW Program is a cooperative partnership between the state, local jurisdictions and employers to provide financial assistance to eligible employees in purchasing homes near their places of employment.

8. Low Income Housing Tax Credits - (LIHTC)

This program provides a direct federal income tax credit to qualified owners and investors who build, acquire or rehabilitate rental housing units to rent to low-income Delawareans.

9. Multi-Family Mortgage Revenue Bond Program - (MFMRB)

This statewide program permits DSHA, through the issuance of tax-exempt mortgage revenue bonds to finance the acquisition, new construction or substantial rehabilitation of apartment complexes which are available for rent to low-income individuals and families.

10. Neighborhood Revitalization Fund - (NRF)

The goal of this program is to help entire communities restore their homes to state Housing Code standards. Neighborhoods and

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communities apply to receive a set aside of funds that their home owners can access in the form of low-interest loans. Home owners residing in approved neighborhoods can access deferred low-interest rate loans of up to $35,000; landlords can borrow up to $25,000

11. Public Housing Home Ownership Program - (PHHOP)

This program, operated in Kent County only, provides Public Housing, Section 8, Capitol Green residents and Waiting List applicants with the opportunity to purchase their own homes in modest, residential neighborhoods.

12. Second Mortgage Assistance Loan Program - (SMAL)

This program provides up to $5,000 (at 6% interest rate) in down payment and closing costs assistance to persons who have not owned a home in the past year.

13. Single Family Mortgage Revenue Bond Program - (SFMRB)

Commonly referred to as the First-Time Home Buyers Program or the Bond Program, this program helps low- and moderate-income Delawareans afford homeownership by providing a **4.95% interest rate mortgage** to persons who have not owned a home in the past three years.

For more detailed information on any of the programs, please see the DSHA website at **http://www2.state.de.us/dsha/**

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Delaware State Housing Authority

The Delaware State Housing Authority recommends the following steps to benefit housing in Delaware.

1. Inventory and analyze projected housing needs.

Each county in Delaware has done this through their comprehensive land use plans.

New Castle County identified the need for more affordable rental housing for families earning below 30% of the median income. New Castle County has also identified a need for reasonably priced assisted living housing.

Sussex County faces the challenge of an affluent second home/ retirement market putting pressure on housing prices and availability.

Kent County works to implement an overall strategy for a balanced land use planning approach benefiting the housing community.

2. Develop goals, policies and objectives to address identified housing needs. Steps to this goal include preserving and improving existing housing and developing new housing.

3. Identify sufficient land to provide housing for all income ranges, placing special emphasis on housing for low- and moderate-income families.

4. Make adequate provisions for existing and projected housing needs for all economic segments.

a. Ensure sufficient land supply, including land to be used for multi-family housing.

b. Offer a full range of housing choices including, but not limited to, multi-family housing, mixed-uses, manufactured homes, accessory living units and detached homes.

c. Offer various lot sizes and densities along with clustering and other design configurations.

d. Provide incentives or requirements that create additional affordable housing units.

e. Provide adequately for special populations including the elderly.

f. Permit accessory dwelling units in residential areas to encourage

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social economic integration and to provide life cycle housing.

g. Enforce property maintenance codes to protect all community members from the few that allow their property to deteriorate to substandard.

h. Encourage infill development by allowing mobile/ manufactured homes on individual lots.

i. Use small lots and small lot zoning to increase density and meet the needs of singles and the elderly.

j. Reduce parking requirements for housing development where studies have shown that less is needed, as well as on transit corridors.